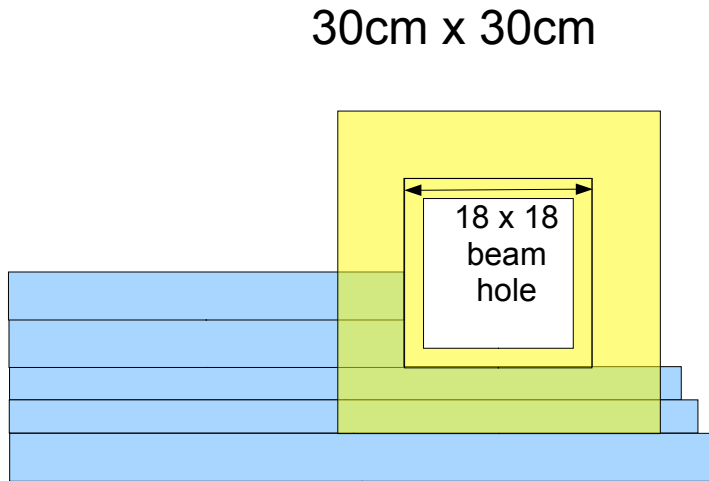
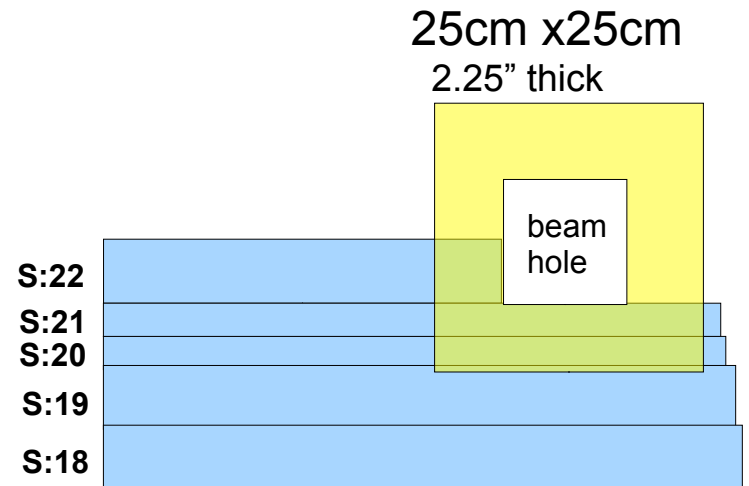


TOF Halo Shield

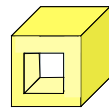
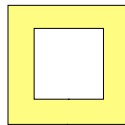
TOF2 Halo Shield



TOF1 Halo Shield



30cm x 30cm
frame 2.25" thick



insert
w/ 1.6" walls

Increase frame width to
34.5cm?

Original TOF Halo Beam Studies

TOF Shielding Study

TOF South PMTs for paddles 18, 19, 20, 21 (closest to beam)
 paddles 18 & 19 are 6cm wide paddles 20 & 21 are 3cm wide

Without shielding

| | Dec-19 00:00 | Dec-19 23:05 | Dec-19 23:20 | Dec-19 18:00 |
|-------|-----------------|-----------------|-----------------|-----------------|
| [MHz] | | | | |
| Beam | 200nA | 300nA | 400nA | 500nA |
| S:21 | 2.3 | 3.3 | 3.7 | 4.7 |
| S:20 | 1.6 | 2.2 | 2.6 | 3.6 |
| S:19 | 1.7 | 2.4 | 2.9 | 3.7 |
| S:18 | 0.8 | 1.2 | 1.5 | 2.1 |

With shielding

| | ----- | Dec-20 | Dec-20 | Dec-20 |
|-------|-------|--------|--------|--------|
| [MHz] | --:-- | 18:00 | 18:45 | 20:40 |
| Beam | 200nA | 300nA | 400nA | 500nA |
| S:21 | - | 2.0 | 2.4 | 3.1 |
| S:20 | - | 1.15 | 1.5 | 1.95 |
| S:19 | - | 2.0 | 2.5 | 3.2 |
| S:18 | - | 1.2 | 1.5 | 2.05 |

Shielding configuration:
 2.25" thick acrylic
 25cm x 25cm

Shielding cover paddles 21,
 20, and part of paddle 19

$-\ln(R/R_0)$

| | | |
|------|------|------|
| 0.5 | 0.43 | 0.42 |
| 0.65 | 0.55 | 0.61 |
| 0.18 | 0.15 | 0.15 |
| 0 | 0 | 0.02 |

Discriminator Scalers:
 TOF:S:T:#:scaler_t1

TOF Shielding Study

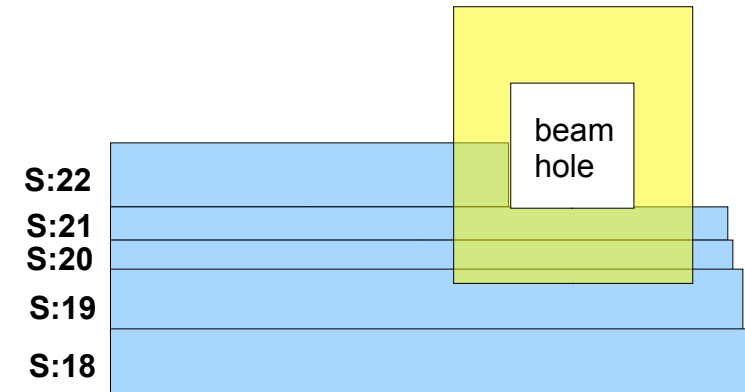
TOF South PMTs for paddles 18, 19, 20, 21 (closest to beam)
 paddles 18 & 19 are 6cm wide paddles 20 & 21 are 3cm wide

Without shielding

| | Dec-19 00:00 | Dec-19 23:05 | Dec-19 23:20 | Dec-19 18:00 |
|-------|-----------------|-----------------|-----------------|-----------------|
| [MHz] | | | | |
| Beam | 200nA | 300nA | 400nA | 500nA |
| S:21 | 2.3 | 3.3 | 3.7 | 4.7 |
| S:20 | 1.6 | 2.2 | 2.6 | 3.6 |
| S:19 | 1.7 | 2.4 | 2.9 | 3.7 |
| S:18 | 0.8 | 1.2 | 1.5 | 2.1 |
| S:22 | | 1.95 | 2.5 | 3.1 |

With shielding

| | ----- | Dec-20 | Dec-20 | Dec-20 |
|-------|-------|--------|--------|--------|
| | | | | |
| [MHz] | --:-- | 18:00 | 18:45 | 20:40 |
| Beam | 200nA | 300nA | 400nA | 500nA |
| S:21 | - | 2.0 | 2.4 | 3.1 |
| S:20 | - | 1.15 | 1.5 | 1.95 |
| S:19 | - | 2.0 | 2.5 | 3.2 |
| S:18 | - | 1.2 | 1.5 | 2.05 |
| S:22 | - | 1.3 | 1.7 | 2.15 |



| $-\ln(R/R_0)$ | | |
|---------------|------|------|
| 0.5 | 0.43 | 0.42 |
| 0.65 | 0.55 | 0.61 |
| 0.18 | 0.15 | 0.15 |
| 0 | 0 | 0.02 |
| 0.41 | 0.39 | 0.37 |

Shielding configuration:
 2.25" thick acrylic
 25cm x 25cm

Shielding cover paddles 21,
 20, and part of paddle 19

Discriminator Scalers: TOF:S:T:#:scaler_t1